Periscope.

ANATOMICAL.

The Theory of Neurons and Their Connection Simply by Contact.—Renaut (*Med. Week*, March 8, 1895). The term neurons, which was first used by Waldeyer, has since been employed by Ramón y Cajal, and many other investigators, to designate a nerve cell in its totality, that is to say, with the inclusion of its axis-cylinder process and its protoplasmic branches; each neuron being an independent nerve element, a nervous unity. The axis-cylinder in its course sends out lateral branches, and ultimately terminates in more or less numerous free ends. The protoplasmic branches resemble the ramifications of a bushy tree, and also terminate in free filaments.

According to Ramón y Cajal, the neurons are connected not by continuity, so as to form anastomoses or reticula, but only by contact, that is to say, by genuine articulations.

In order to test these theories, Renant studied the multipolar nerve cells and their reciprocal relations in the retina of rabbits and guinea-pigs, using Ehrlich's method of staining with methylene-blue. In preparations made in this manner, the nerve cells present ramifications of remarkable extent and complexity, whereas in the multipolar cells prepared by Golgi and Ramón y Cajal's method the ramifications are less complex and less bushy. In the former, indeed, the cells resemble a tree with all its branches, twigs and minutest branchlets, while in the latter the tree also exists, but apparently trimmed and shorn of its outer branches. It being evident, therefore, that the ultimate ramifications of nerve cells are not brought out by chromate of silver, he is inclined to think that Ramón y Cajal goes too far when he asserts that the protoplasmic processes invariably terminate by free ends.

By means of certain other permanent preparations made with methylene-blue, it is seen that some protoplasmic prolongations of a nerve cell provided with an axis-cylinder communicate with those of a cell possessing only protoplasmic prolongations, but no axis-cylinder, a variety of cells which have been found in the retina by Dogiel and Ramón y Cajal, and which the latter describes under the name of amacrine cells. There are, consequently, neurons which are connected and continued by some of their protoplasmic prolongations, though the connecting link is extremely slender, so slender, in fact, as to be imperceptible in a preparation treated by chromate of silver.

Lastly, in preparations fixed by picrate of ammonium in the presence of iodine, he has distinctly seen protoplasmic prolongations, springing from large ganglionic cells, run together so as to form a fine network on the inferior aspect of the basal plexus. Other peculiarities which appear to possess a certain importance have likewise been observed: in the first place, the undoubted existence of a hyaline capsule, enveloping the cell which is continued, but only for a short distance, along the protoplasmic prolongations.

The second important detail is the peculiar appearance, presented by the plexiform network formed by the protoplasmic prolongations. These appear to be beaded, owing to the fact that each one presents a series of vacuolar swellings. In this beaded network the protoplasmic prolongations approach each other, and it is principally there that the articulation by contact is effected.

To sum up, it cannot be maintained that the neurons are never continuous, and, consequently, the theory of connection simply by contiguity does not appear to him to be quite exact.

On the other hand, it must be recognized that, if the articulation of the neurons with each other is mainly one of contiguity, it is accomplished in the special manner already alluded to. J. C.

The Posterior Longitudinal Fascicle.—(*Hinteres Langbündel, Faisceau Longitudinal Posterieur*). Van Gehuchten (*Buletin de l'Académie Royale de Medecine de Belgique*, 1895, No. 2).

The posterior longitudinal fascicle is a bundle of nerve fibres which passes from the proximal extremity of the mid-brain through the whole extent of the peduncle (Stamm) to the middle parts of the medulla oblongata, where it becomes mixed up with the fibres of the reticular formation. The said bundle is situated at both sides of the "raphe" ventrad from the aqueductus Sylvii and from the median part of the floor of the fourth ventricle. Van Gehuchten has studied the course, origin and connections of this fascicle in the brains of trouts by use of the methods of metal impregnation (Golgi's and Ramon y Cajal's methods). The result of his researches leads him to the following conclusions :

1. The posterior longitudinal fascicle is formed exclusively of descending fibres. Consequently it must be considered as a motor nerve bundle.
2. It extends from the proximal part of the mid-brain to the anterior column of the spinal cord. It increases in volume in caudad direction, by taking up new fibres from the adjoining gray masses.
3. Its most proximal fibres take their origin from cells which form a group situated at both sides of the median line, ventrad from the ependymary epithelium and dorsad from Meynert's fascicle; for a certain distance this gray mass which Van G. calls the superior nucleus of the "posterior longitudinal fascicle" accompanies the nucleus of the third nerve, being situated dorsad to it.
4. The remaining fibres composing the posterior longitudinal fascicle originate from cells scattered in the "trunk" (Stamm), most of which are situated along the descending root of the fifth nerve and at the level of the nucleus of the seventh nerve.
5. In their course through the "trunk" the fibres of the post-longitudinal fascicle give off numerous collaterals which ramify in the adjoining gray masses, especially in the nuclei of the third, fourth and seventh nerves and in the anterior horns of the spinal cord, thus connecting themselves with the cells which give origin to peripheric motor fibres.
6. Most of the fibres of the posterior longitudinal fascicle are direct (not crossed) fibres, part of them, however, originate from cells situated on the opposite side of the median line—crossed fibres.
7. Of the collaterals, which the fibres of the posterior longitudinal fascicle give off in their course, the larger part remain on the same side (direct collaterals), part pass the median line to ramify in gray masses of the opposite side (crossed collaterals).
8. The posterior commissure has no connection with the posterior longitudinal fascicle; that is, no fibres or collaterals of the latter are seen becoming fibres of the posterior commissure. ONUF.

Reil's Fascicle and the Cerebral Cortex.—By Prof. Déjerine and Mme. Déjerine (*Gazzetta degli Ospedali e delle Cliniche*, 1895, No. 46).

Based upon the result of the examination of nineteen brains affected with cortical lesions, the authors conclude that Reil's median fascicle (fillet) consists for the most part of fibres, the cells of origin of which are situated in the nuclei of Goll's and Burdach's (cuneate) columns. They